

WE CLAIM:

1. A method for sintering a thin gel plate, comprising:
  - 5 placing a layer of refractory powder on a support surface;
  - placing a thin gel plate on the layer of refractory powder;
  - elevating the temperature of the thin gel plate to a sintering temperature, to sinter the plate, wherein the refractory powder partially fuses, to anchor the gel to the support surface and prevent non-uniform stresses in the plate from warping the sintered plate; and
  - separating the sintered plate from the support surface.
2. A method as defined in claim 1, wherein the thin gel plate is a silica gel plate.
3. A method as defined in claim 2, wherein the thin silica gel plate is derived from a sol-gel process.
4. A method as defined in claim 1, wherein the refractory powder has a sintering temperature within a range of 1100 to 1500 degrees Celsius.
5. A method as defined in claim 1, wherein the refractory powder sinters above the sintering temperature of the gel plate.
6. A method as defined in claim 1, wherein the refractory powder is a silica-based powder.

7. A method as defined in claim 6, wherein the silica-based powder has a particle size between 10 nm and 500  $\mu$ m.
8. A method as defined in claim 6, wherein the silica-based powder is derived by fuming, precipitating, or sol-gel processes.
9. A method as defined in claim 6, wherein the layer of silica-based powder has a uniform thickness of less than about 1.5 cm.
10. A method as defined in claim 9, wherein the layer of silica-based powder has a uniform thickness of less than about 3 mm.
11. A method for sintering a thin gel plate, comprising:  
placing a layer of ceramic powder on a support surface;  
placing a thin gel plate on the layer of ceramic powder;  
elevating the temperature of the thin gel plate to a sintering temperature, to sinter the plate, wherein the ceramic powder partially fuses, to anchor the gel to the support surface and prevent non-uniform stresses in the sintered plate from warping the plate; and  
separating the sintered plate from the support surface.
12. A method as defined in claim 11, wherein the thin plate is a silica gel plate.
13. A method as defined in claim 12, wherein the thin silica gel plate is derived from a sol-gel process.
14. A method as defined in claim 11, wherein the ceramic powder is fumed silica powder.

15. A method as defined in claim 14, wherein the layer of fumed silica has a uniform thickness of less than about 1.5 cm.

16. A method as defined in claim 15, wherein the layer of fumed silica has a uniform thickness of less than about 3 mm.

17. A method for sintering a thin silica gel plate, comprising:  
placing a layer of silica-based powder on a support surface;  
placing a thin silica gel plate on the layer of silica-based powder;  
elevating the temperature of the silica gel plate to a sintering temperature, to sinter the plate, wherein the silica-based powder partially fuses, to anchor the gel to the support surface and prevent non-uniform stresses in the sintered plate from warping the sintered plate; and  
separating the sintered plate from the support surface.

18. A method as defined in claim 17, wherein the thin silica gel plate is derived from a sol-gel process.

19. A method as defined in claim 17, wherein the silica-based powder is derived by fuming, precipitating, or sol-gel processes.

20. A method as defined in claim 17, wherein the silica-based powder has a sintering temperature within a range of 1100 to 1500 degrees Celsius.

21. A method as defined in claim 17, wherein the silica-based powder sinters at the sintering temperature of the silica gel plate.

22. A method as defined in claim 17, wherein the silica-based powder sinters above the sintering temperature of the silica gel plate.

23. A method as defined in claim 17, wherein the refractory powder has a particle size between 10 nm and 500  $\mu\text{m}$ .

24. A method as defined in claim 17, wherein the support surface is a quartz glass support surface.

25. A method as defined in claim 17, wherein the layer of silica-based powder has a uniform thickness of less than about 1.5 cm.

26. A method as defined in claim 23, wherein the layer of silica-based powder has a uniform thickness of less than about 3 mm.